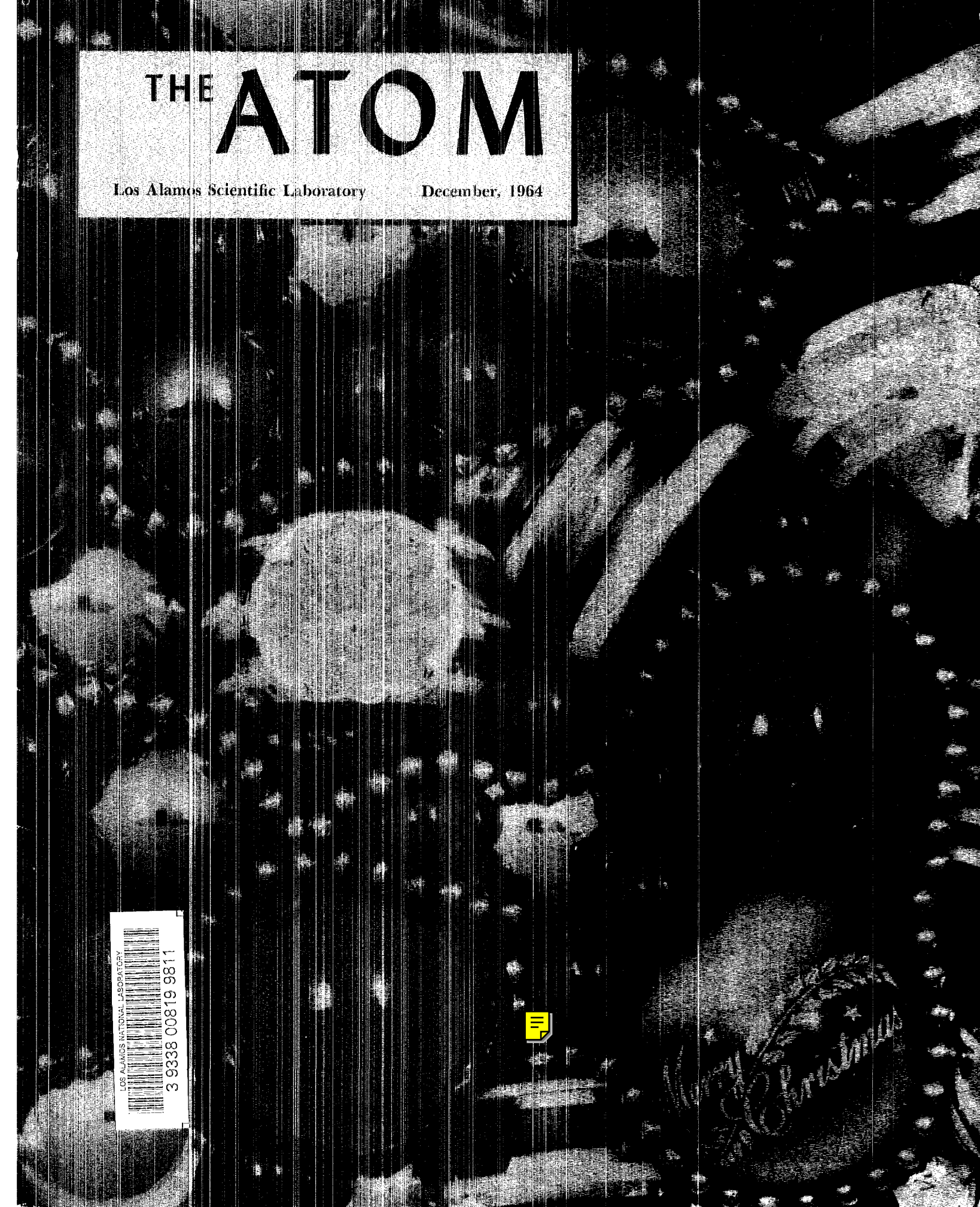
THE ATOM

Los Alamos Scientific Laboratory December, 1964



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Short Subjects

Los Alamos Scientific Laboratory won three first place awards for its national recruiting advertising in the second annual New Mexico advertising contest sponsored by the Albuquerque Advertising Club. The awards were for national trade journal campaigns, best single advertisement in national trade journals, and for the facilities and public relations brochure.

Storage capacity for the liquid hydrogen propellant used in tests of LASL experimental rocket reactors will be increased eleven-fold at one of the test cells at the Nuclear Rocket Development Station in Nevada. A contract was awarded last month for the construction of two half-million-gallon Dewars to be erected at Test Cell C, where the Laboratory will test its future Phoebus advanced reactors. The increased storage capacity will enable full power Phoebus tests of about a half-hour duration. Reactors in the Kiwi series could be tested for only about eight minutes at full power before exhausting the test cell's present capacity of 100,000 gallons of liquid hydrogen.

The Los Alamos Community Chest drive ended November 13 with 87.7% of the $48,450 goal collected, but 1200 pledge cards had not been turned in when the campaign ended, according to Campaign Chairman Roger E. Bordenkircher.

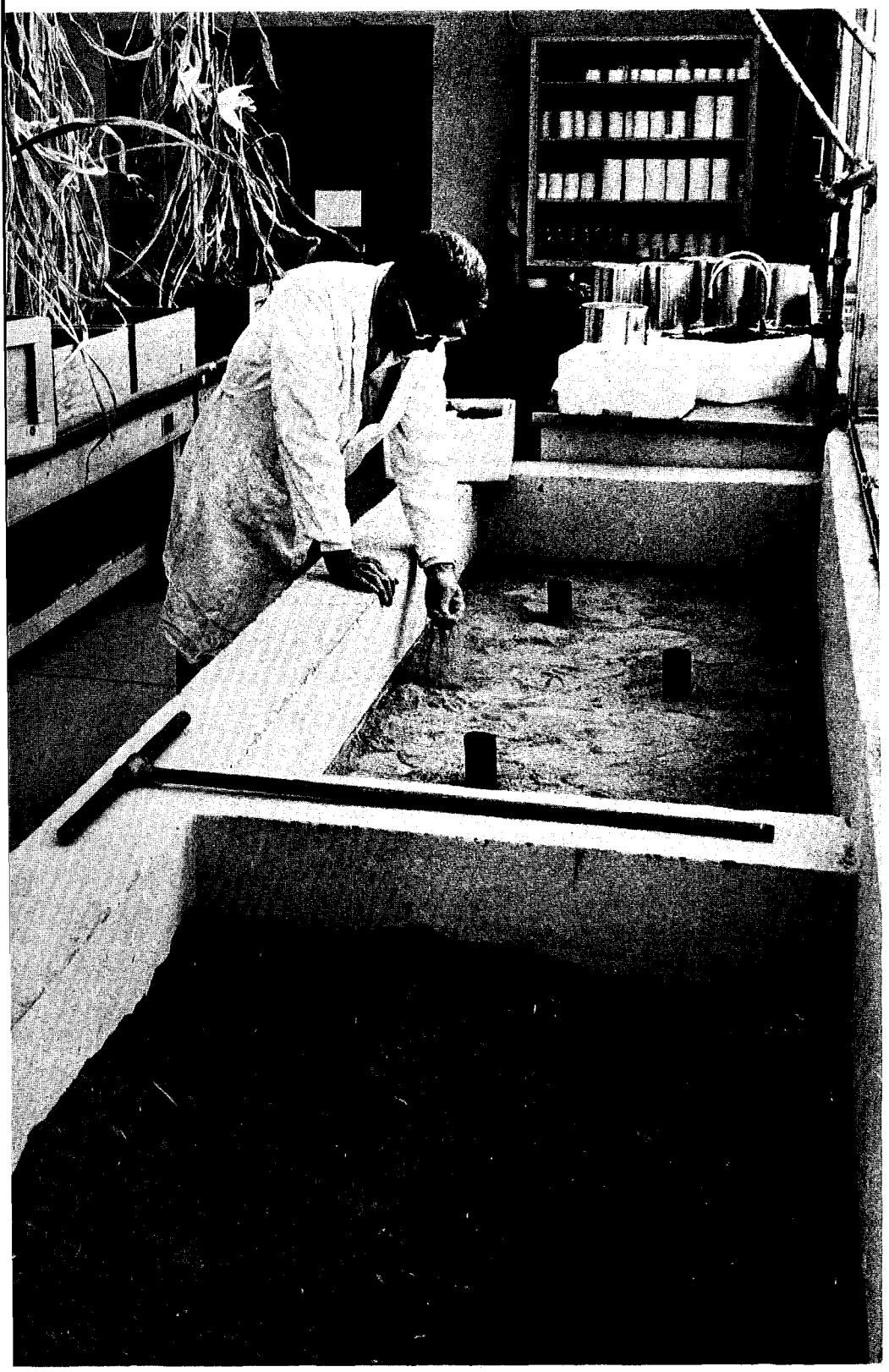
Dimas Chavez, administrative assistant in SP-1, state chairman of the Junior Chamber of Commerce Mental Retardation project, has been named by Governor Jack Campbell as a member of his Advisory Council on Mental Retardation.

"Art and the Atom," a traveling exhibition of 30 contemporary paintings by Taos artists, including several used by LASL in its national recruiting advertising, is on display at the Oklahoma Art Center through December 27.

Delacroix Davis, Jr., assistant manager for administration and construction at the AEC's Los Alamos area office since March, 1962, has been transferred effective December 6 to the Albuquerque Operations Office as director of the newly established Management Analysis Division.

Advanced plans are being made by the LASL Public Relations Office for the Family Days visitation to the Laboratory held every five years. Next year's event, scheduled for July 17 and 18, will also commemorate the twentieth anniversary of the world's first atomic explosion by LASL at Trinity Site, near White Sands, on July 16, 1945. Family Days afford an opportunity for families and friends of LASL employees to see the facilities otherwise closed to the public for safety or security reasons.

The AEC has made available for public use 41 more patents owned by the Government and held by the Commission, bringing to 3,372 the number of AEC-held patents and patent applications released for liscensing. Two of the 41 patents are in the name of Henry L. Laquer, CMF-9. One is for a superconductive electric switch, and the other for an incremental electrical method and apparatus for energizing high-current superconducting electromagnets.



Eric Fowler fingers the consistency of test plot of Rio Grande Valley soil. In foreground is dark loess from Kansas wheat field. Protruding pipes are access wells for moisture content probes.

THE And The

LASL HAS RECEIVED SOILS FROM THREE STATES FOR A UNIQUE EXPERIMENT

Twenty-ton samples of farmland from South Dakota, Kansas and New Mexico have been moved to big concrete "pots" at Los Alamos for a unique experiment involving radiation in soils and plants.

The soil samples will be used in a series of Health Division tests that may take up to ten years to complete, but which will give scientists and soils experts a good idea of what happens to radioactive waste materials that might be introduced to crop-producing lands.

Eric Fowler, alternate group leader of H-7, the industrial waste research group, is directing the experiments. Soils Laboratory work is centered at TA-50.

Knowledge gained from the experiments will have an increasing application as the working atom becomes a more common partner in our everyday life. An example is the nuclear power plant. Water, which frequently is used as a coolant in such generators, picks up minute amounts of radioactivity that remains in suspension when the water returns to streams and other watercourses.

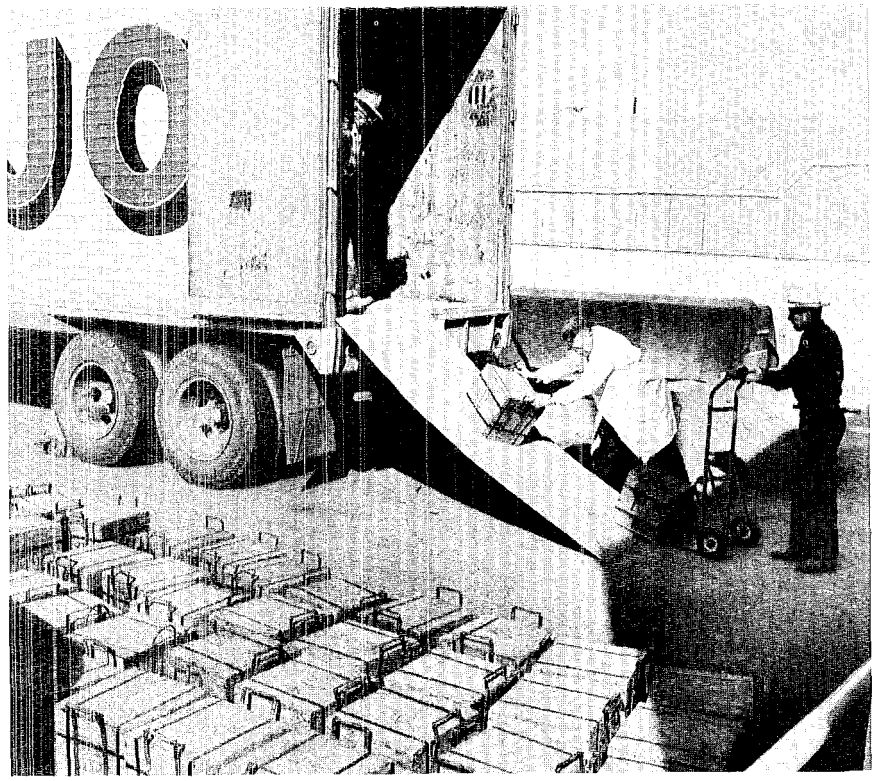
The Los Alamos scientists want to know the fate of the radioactivity. Will it remain in the soil? Perhaps percolate downward to other water sources? Or will the radioactivity be taken up by plants and carried away in some manner with agricultural produce?

Simpler experiments have already shown that different soils behave differently when radioactivity is

ATOM South 40

BY EARL ZIMMERMAN

Photographs by Bill Regan



Numbered cartons of soil samples are unloaded at TA-50 in preparation for long-running tests on uptake of radioactivity.

present. There is an even greater variety of responses in the uptake of different plants. Radishes have been found to transmit very little radioactivity to the second generation, retaining it in first-generation foliage. Strontium 90, for instance, has been found to concentrate in the radish leaf hairs.

The three test plots, Fowler said, represent three of the major soils classifications in the United States:

—South Dakota's sample is glacial till, carried by the Wisconsin-Iowa Glacial Drift, probably from the northern border regions of the United States and Canada. The plot is from a field at the South Dakota State College at Brookings and has been under cultivation for 70 years, most recently with 1964 spring wheat.

—Kansas wheat country soil is known as Loess and had its origin in the young peaks of what now are known as the Rocky Mountains. Windborne, it was deposited across the great plains as the mountains were ground away by primordial westerly gales. The Los Alamos sample came from a Kansas State University field of the Colby Experimental Station near Oakley, in the northwestern part of the state.

—New Mexico's Rio Grande Valley is rich with a water-borne soil that is finely ground from the native rocky outcrops. The sample is from New Mexico State University's Los Lunas Experimental Station near Belen.

In all three instances the Soil Conservation Service helped select an ideal sample and assisted in classifying the soil origin.

Extreme care was taken to assure an exact transplant. This was no simple shovel-into-a-wheelbarrow type of excavation. Chain saws were used to cut 13-inch cubes from the original site. Each cube was shrouded with a plastic bag and placed in one of 288 numbered wooden cartons. In this manner a block of soil 4 by 8 feet in area and some 9 feet deep was cut, cataloged and packed in a truck. Arrival in Los Alamos signaled a reverse-order operation for correct reassembly of each of the three-dimensional jigsaw puzzles. Fowler used a chart showing the proper location of the cubes and supervised gardeners borrowed from the Los Alamos Parks Department. Each "potting" took about two weeks.

"Such exactness in the transfer of the soils is necessary to provide the controlled conditions for the experiments," Fowler pointed out. "We want to duplicate as exactly as possible the conditions that existed when the soils were in their native locations."

One side of each of the deep "pots" is retained by a tight board wall, accessible from adjacent pits. By removing boards at various levels the scientists are able to expose any "horizon" of the plot. It is thus that the radioactive materials will be introduced.

"We will pull a core horizontally," Fowler explained," then mix the earth with a test nuclide and replace the core."

"Rain" will fall whenever needed, from a specially designed device that arcs gently above the test plots, dispensing droplets of water. Moisture will be administered uniformly to all portions of each plot.

The atom will also be used to make accurate counts of moisture content in the soil. Two-inch plastic pipes have been inserted the full

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Soils . . .

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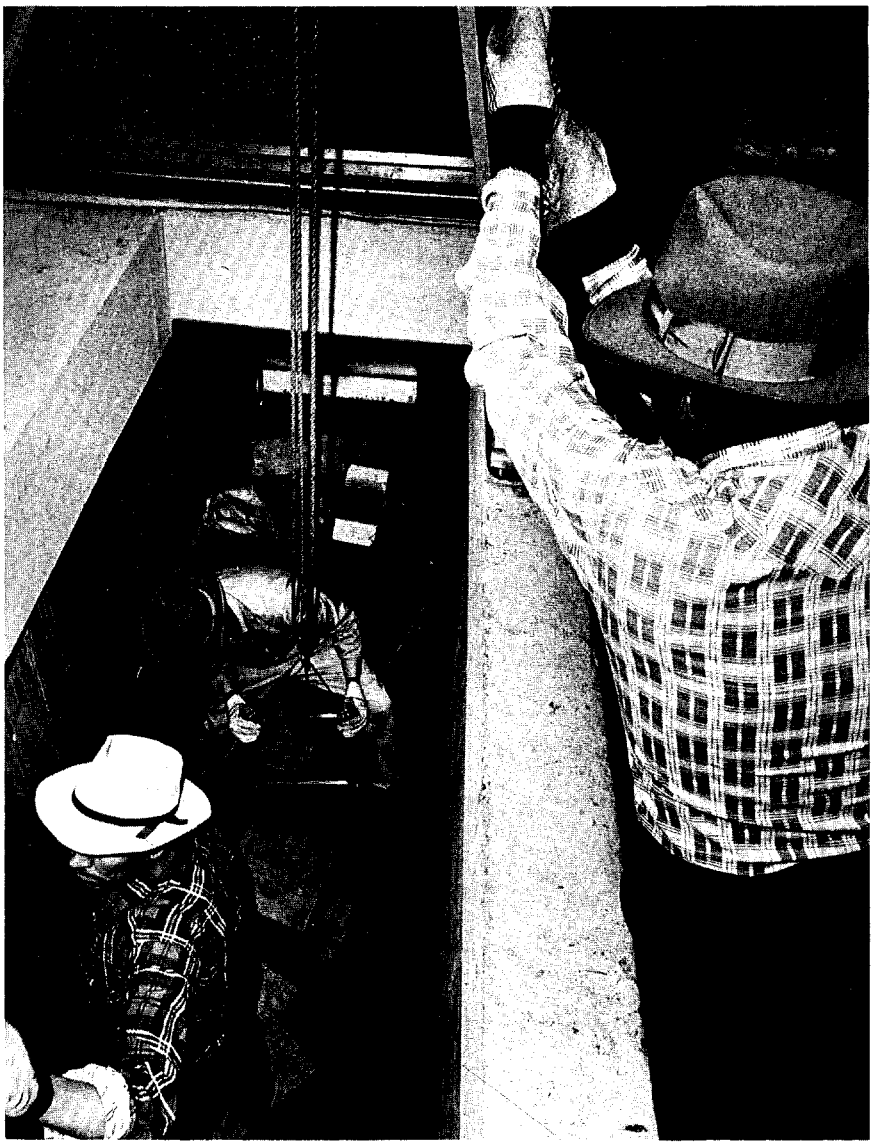
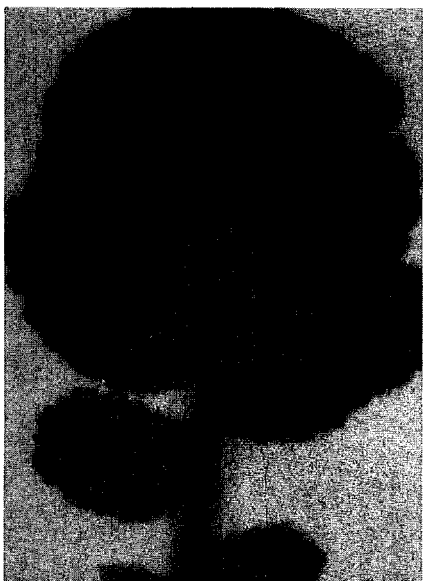
depth of each plot. To measure moisture content, scientists lower a source of radioactivity in the pipe.





Above: Cubes of South Dakota are carefully transplanted in nine-foot-deep "pot" at H-7 Soils Laboratory.

Left: Autoradiograph of radish leaf that was grown in soil containing radioactivity. Dark dots are concentration of strontium 90 in leaf hairs.

Neutrons emitted by the source strike hydrogen atoms in the soil moisture, causing them to become temporarily radioactive. A sensing device in the test head "reads" the amount of radiation indicated by the activated hydrogen. The greater the radioactivity, the greater the moisture content.

Fowler stressed that the prime purpose of the experiments is to determine what happens to the radioactive elements, not what happens to the plants. There are no plans to study the effect of radiation on the plant growth itself. That is not to infer that plant response is not of interest. Instead of watching for botanical oddities, however, the scientists will be studying where the nuclides are deposited in the plant.

An accumulation of radioactive radish foliage—or wheat chaff, or corn stalks—could pose a serious disposal problem. Burning, burying or plowing under might compound the hazards. Such matters as these loom equally in importance with learning about radioactivity in edible materials.

Strontium 90 and radioactive cesium will be the nuclides most commonly used in the experiments. These are the materials that most concern biologists because they are common by-products of nuclear reactions and are relatively long-lived.

A fantastic number of individual experiments will be conducted. Nuclides will be introduced at nine levels in each plot. Five chemical samples will be taken from each layer. There will be 15 chemical determinations from each sample. That computes out to somewhat more than 2000 tests for each plot.

Crop "rotation" in the miniature farms will follow that recommended for the native area. "Little South Dakota" will raise wheat, corn and soy beans. The Kansas soil will grow winter wheat and alfalfa. The irrigated land from New Mexico will get alfalfa, beans, prairie grasses, cotton and, probably, some chili.

Finger Lauds Rover Reactor Tests

Greatest Rocketry Advancement Since Goddard, SNPO Manager Says

Harold B. Finger, head of the nation's Space Nuclear Propulsion Office, discusses a recent Kiwi reactor test at the Nuclear Rocket Development Station in Nevada.

The nuclear rocket reactor tests conducted at the Nuclear Rocket Development Station, Nevada, during 1964 by both Los Alamos Scientific Laboratory and by the NERVA team of Aerojet and Westinghouse, constitute the greatest advance in rocketry and rocket performance since Goddard started flying his pump-liquid rocket systems in New Mexico during the 1920's and '30's.

This statement was made by Harold B. Finger, head of the nation's Space Nuclear Propulsion Office, during a mid-November press briefing held at NASA headquarters in Washington, D.C. During the briefing, Dr. Raemer E. Schreiber, LASL technical associate director, discussed technological problems and results of Los Alamos rocket reactor testing.

In his statement, Finger referred to the successful LASL Kiwi-B4-D test held May 13, 1964, the full-power Kiwi-B4-E test of August 28 and the restart of the same reactor on September 10, and the successful test and restart of the NERVA NRX-A2 reactor of September 24 and October 15.

Finger said that by using a nuclear rocket engine based upon the Kiwi/NERVA reactors as they exist now, the United States could nearly double the deliverable landed moon payload of a three stage Saturn V chemical rocket. He said, "If we take the performance which we actually achieved in the Kiwi and NERVA reactor experiments during 1964, we can then, with a high degree of accuracy, estimate the performance that would be achieved if an engine like this were used in a third stage of a Saturn V vehicle.

"This kind of vehicle, made up of the first two stages of Saturn V with a nuclear third stage, could be used for extended lunar operations beyond the Apollo program, and could also be used for unmanned missions throughout the solar system."

Finger explained that a three-stage Saturn V could land a payload of about 27,000 pounds on the moon. The minimum direct landed weight required to land men on the moon and return them to earth is about 31,000 pounds, which means the Saturn V must be enlarged to conduct the preliminary direct flight mission.

If a nuclear third stage was placed on the Saturn V, using the the performance level already achieved, Finger said the vehicle could then deliver a landed payload of about 47,000 pounds on the moon. The excess payload would be enough over the minimum to conduct a mission of about 30 days on the moon's surface.

Finger noted that one of the major justifications for a nuclear rocket reactor is for a Mars mission. There are large variations in the weight that must be established in Earth orbit to accomplish a Mars mission, depending on the year in which the mission is done, details of trajectory, propulsion modes, and kind of propulsion.

For an all-chemically prepared system the range of weights required in Earth orbit varies from something like 3 million pounds to 25 million pounds. For a nuclear system the weight established in Earth orbit varies from a million pounds to 5 million pounds. Finger said it is therefore conceivable that 2 to 20 million pounds could be saved by using nuclear propulsion. "It is for that reason," he said, "that we have emphasized the use of nuclear propulsion in this system."

304 LASL Employees Cited For University Service

Employees with an accumulation of more than 4000 years of service to the Laboratory were cited last month at service pin award ceremonies. A total of 304 employees were named. The figure includes 41 who had become eligible but were not present at ceremonies earlier this year. Director Norris E. Bradbury presented the pins, to 124 10-year employees on November 24, and on the next day to 158 who have been with LASL for 15 years, and 22 who are 20-year employees. The list includes five employees from the Los Angeles Purchasing Office (Sp-LA), who received their pins in a separate ceremony there.

THOSE AWARDED 20-YEAR PINS:

William H. Ashley, CMB-1; John P. Balagna, J-11; Leon J. Brown, J-12; James H. Coon, P-4; Mary Ford, CMF-DO; Josephine L. Gilligan, J-3; Maxwell Goldblatt, CMF-4; Edward F. Hammel, Jr., CMF-5; Jesse L. Jones, SD-1; Wright H. Langham, H-4.

Donald P. McMillan, N-1; Espiridion Montoya, SD-5; Norris G. Nereson, P-2; Rene J. Prestwood, J-11; Eugene S. Robinson, CMF-4; Roderick W. Spence, N-DO; Vernon O. Struebing, CMF-5; William Van Buskirk, SD-1; Martin P. Warren, P-9; Edward F. Wortmann, SP-1; Max H. Beuchat, SP-LA; Mildred E. Moore, SP-LA.

15-YEAR PIN WINNERS:

John W. Anderson, CMB-11; Jesse Aragon, GMX-3; Larned B. Asprey, CMF-4; William L. Baird, J-12; James J. Banta, W-1; John W. Barnes, J-11; George H. Best, K-1; Wendell A. Biggers, J-12; Joseph B. Bourne, Jr., GMX-3; Thomas J. Boyd, Jr., GMX-11; William L. Briscoe, P-1; John E. Brolley, P-DO-R; Armand T. Brousseau, P-15; Gordon L. Brown, SD-2; Frank J. Brush, W-7.

John F. Buchen, CMB-7; George P. Bucy, GMX-3; Blendin L. Burton, GMX-4; Rudolph L. Campbell, SP-3; Ignacio S. Chavez, GMX-3; John J. Clifford, D-8; Filmore S. Criss, N-1; Stuart C. Crowley, SD-5; Felix A. DePaula, GMX-6; Lena L. Diehl, GMX-3.

Denton T. Doll, CMB-6; Kathleen P. Donovan, P-1; Fred E. Doremire, W-3; Ralph E. Dorsey, J-12; John E. Dougherty, W-3; Alfred C. Dumrose, CMB-8; Frank J. Dunn, W-7; Claudia H. Elliott, ENG-4; Bertha G. Fagan, T-1; Peter Fagan, GMX-4.

I. Frank Farrar, ENG-4; George C. Fitzgibbon, CMF-2; Herbert B. Fletcher, GMX-3; George P. Ford, J-11; William E. Fox, SD-3; Earl W. Fullman, J-16; Avery M. Gage, N-2; Bailon Gallegos, SP-4; Louis A. Geoffrion, K-2; Alfredo J. Gonzales, GMX-3; Anthony J. Greco, GMX-3; Edward B. Grothus, GMX-4.

Lester S. Hackenberry, GMX-7; Thomas L. Hamblet, K-4; Gale S. Hanks, CMB-6; Hillis J. Harrington, SD-5; Paul Hegler, J-6; Clarence F. Henderson, H-DO; James T. Hume, P-1; Herbert M. Hutcheson, SP-4; Edwin C. Hyatt, H-5; Hugh J. Karr, P-14; Preston Keevama, SP-2.

Edwin L. Kemp, P-16; Leonard W. Kissinger, GMX-2; Jere D. Knight, J-11; Harold E. Langley, GMX-8; Kenneth J. Leibee, Jr., SP-3; Kathryne B. Lewis, PER-1; W. Burton Lewis, CMF-2; Cresencio Lopez, SP-4; Filiberto Lovato, SP-4; Arturo Lucero, GMX-3; Walter E. McCracken, ENG-1; William J. McCreary, CMB-8.

Charles V. McGoff, ADP-SF; Edward Maestas, GMX-3; Flavio Maestas, SP-4; Jose A. Maestas, SP-4; Alonzo U. Maez, GMX-3; Phil S. Marrs, GMX-3; Henry Martinez, GMX-3; Juan E. Martinez, SP-3; Juan P. Martinez, GMX-3; Pedro R. Martinez, SP-3; Roberto E. Martinez, GMX-3; George M. Matlack, CMB-1.

Andres Montoya, SP-3; Antonio J. Montoya, GMX-3; Eloy J. Montoya, J-10; Willie Montoya, SP-4; Willie N. Montoya, SP-4; Austin M. Morgan, SD-5; Donald M. Mo-

sher, SD-5; William C. Moxley, GMX-3; Manual J. Naranjo, GMX-2; Harold W. Navcaux, SD-5; Robert W. Newman, J-DO; Thomas W. Newton, CMF-2.

Juan Olivas, GMX-3; Petrita Q. Oliver, J-11; Hernando V. Ortiz, SD-1; Viola A. Ortiz, GMX-7; Robert K. Osborne, W-4; Roy Owen, ENG-4; Paschal J. Pallone, SD-5; Helen L. Parrott, AO-3; Joseph F. Pazdra, GMX-3.

James D. Perrings, H-4; Rolf E. Peterson, K-DO; John H. Pomeroy, GMX-3; Kenneth Price, GMX-3; Secundino O. Quintana, P-DO; Sherman W. Rabideau, CMF-2; Verdi L. Raper, GMX-3; Leslie M. Redman, D-6; Lillie Rico, GMX-7; J. L. Robinson, GMX-3; Benjamin T. Rogers, GMX-11; Lawrence M. Rohrer, SD-4; Robert K. Rohwer, GMX-2.

Ruth V. Romero, SP-DO; Theodore G. Roybal, ENG-3; William J. Ruthven, SP-3; Edgar B. Rynd, W-1; Cristobal J. Sanchez, GMX-3; Luis G. Sanchez, SD-5; Tomas G. Sanchez, CMF-13; Arthur D. Schelberg, J-16; Aldred E. Schofield, P-14; Kenneth J. Schowalter, SD-5.

Pilar Serna, PER-4; Thomas L. Shipman, H-DO; David R. Smith, N-2; Louis C. Smith, GMX-2; Maynard E. Smith, CMB-1; Milo M. Smith, SD-5; Hulen Stallings, SP-4; John D. Steely, GMX-1; Donald E. Stevens, P-1; William H. Stewart, GMX-3; Ellery Storm, H-1; Arthur N. Strein, GMX-3; John E. Sweeney, W-1; Eugene G. Szklarz, CMB-3.

Mark H. Tattan, CMB-7; Marvin C. Tinkle, CMB-8; Robert D. Tyson, SD-5; Mary J. Ulery, CMB-3; Paul Valdez, SD-4; Simon J. Vigil, GMX-3; Victor Vigil, CMB-6; James T. Waber, CMF-5; Robert F. Warner, K-4; Joseph L. Weber, ADP-SF.

Eva L. M. Wentworth, CMB-7; D. Lloyd Williams, H-4; Vernon L. Zeigner, N-3; Eugene G. Zukas, CMF-13; Wiley S. Williams, SP-DO; Raymond Zinkowski, J-6; Kurt F. Freygang, SP-LA; Glenn O. McIntire, SP-LA.

CITED FOR 10 YEARS' SERVICE:

Allie M. Allen, SP-3; Thelma D. Alvord, CMF-13; Richard C. Anderson, N-5; Floyd B. Baker, CMF-2; Henry C. Beg, S-DO; Austin D. Bonner, GMX-6; Richard O. Branch, T-1; Emmett L. Brazier, ENG-1; Harry L. Brown, CMF-13; Lillian L. Chavez, D-4.

Curtis G. Chezem, N-2; Charles Q. Clark, SD-1; Elizabeth V. Coca, CMB-DO; Donald R. F. Cochran, P-11; Oliver A. Cole, GMX-3; William H. Cruise, SD-1; Adeline E. Damiano, GMX-2; William C. Davis, GMX-8; Harry Dreicer, P-14; Shirley N. Dresback, CMB-3; Jerome E. Dummer, H-1; Dana E. Elliott, GMX-1; Jimmy C. Elliott, GMX-11.

Charles A. Emery, CMB-11; Laurene F. England, SP-3; Carl A. Enloe, ENG-4; John R. Farmer, GMX-3; Lillian M. Fox, P-1; William A. Fox, CMB-7; William J. Frankoski, J-11; Thomas Gardiner, P-1; Manfred J. Gerardot, GMX-3; Thomas N. Godfrey, T-2; Elmer L. Grady, SD-5; Lonnie D. Gray, GMX-8; Anna E. Gregersen, D-6; Martin L. Gursky, T-9.

Ralph B. Hanneman, J-7; Eskild P. Hansen, SD-5; Albert M. Harris, GMX-3; Paul O. J. Harris, SD-1; Wilmetta E. Helms, GMX-8; Emma M. Henderson, T-5; Robert L. Henning, ENG-2; James F. Hipskind, GMX-3; John E. Hockett, CMF-13; Herman W. Hoerlin, J-10; Carl Holtom, GMX-4; John R. Hopkins, N-3; Jasper A. Jackson, P-DO-R.

Thomas L. Jordan, T-1; Ladislaus W. Kachelmeier, SD-1; Harvey J. Kellogg, SD-5; Leona M. Kelly, CMB-1; Clarence E. Kirgan, SD-5; Edward A. Knapp, P-11; Verna Maye Konrad, AO-4; Andrew M. Koonce, J-8; Wilbur A. Korte, SD-5; Ferdinand H. Kruse, CMF-4; Herald W. Kruse, J-10.

Norman A. Kuehn, SD-1; William J. Lambert, SD-1; John D. LaMotte, CMB-6; Charles E. Landahl, N-1; Robert M. Lang, N-4; Beverly A. Lee, PER-2; Clarence E. Lee, T-4; David A. Liberman, T-4; Edith H. Lilly, H-4; H. Jerry Longley, T-9; Merced M. Lopez, W-3.

Jose N. Lujan, GMX-3; Alvin R. Lyle, ENG-1; Austin D. McGuire, P-11; Joseph C. McGuire, K-2; Maurice Manes, W-1; Mercedes Martinez, SP-3; Roman Martinez, H-4; Vidal M. Martinez, N-DO; Joseph E. Marx, SD-4; John B. Miller, GMX-2.

Kenneth B. Mitchell, CMB-1; Baudino J. Montoya, GMX-9; Emil Nordhaus, SD-5; Roy A. Olson, P-4; Leopoldo Ortiz, H-4; Donald G. Ott, H-4; Frederick R. Parker, GMX-10; Loraine G. Parten, PER-5; Marjorie J. Peacock, P-12; Raymond A. Pederson, H-1; Frances O. Peters, W-4; Robert W. Peterson, J-16; Albert G. Petschek, T-12; John T. Pulos, J-12; John B. Ramsay, GMX-8.

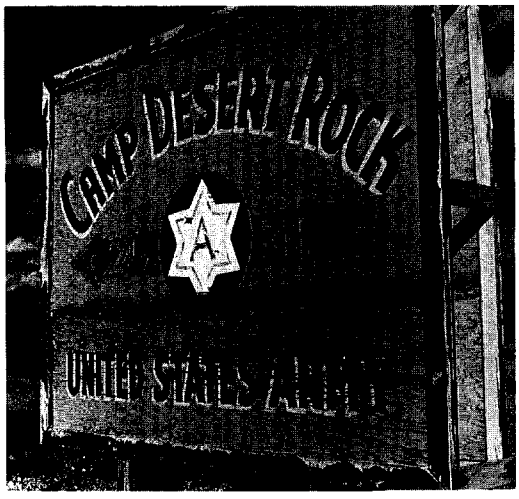
James G. Reavis, CMB-11; James C. Robinson, SD-1; Mollie G. Rodriguez, J-DO; Ruben G. Rolie, SD-5; Robert E. Roush, W-1; R. Manuel Salazar, SP-2; Nora C. Sanchez, W-1; Robert G. Schrandt, T-8; Eulogio J. Serrano, SD-3; Morton C. Smith, CMF-13; Naomi B. Smith, AO-2; Welton Smith, ENG-4; Thomas F. Stratton, N-5.

Theodore Suina, W-1; R. Dean Taylor, CMF-9; Adiopoldo Trujillo, H-4; Herbert E. Ungnade, GMX-2; Angie T. Van De Valde, PER-3; John C. Walden, CMB-1; John T. Weinbrecht, N-3; Lloyd C. Wilkerson, K-4; Eugene M. Willbanks, T-1.

Orville G. Winslow, GMX-8; Walter P. Wolff, J-8; William J. Worlton, T-1; William H. Yeamans, SD-5; Mary I. Hatfield, SP-LA.

CAMP DESERT (ED) ROCK

A Decade Ago Camp Desert Rock Was A Busy Army Post. Now It's Just Another Nevada Ghost Town



Little more than a mile from Mercury, Nevada, just southwest of the Nevada Test Site, is a dreary little place called Camp Desert Rock.

Ten years ago Desert Rock was a busy Army post, but today it is just another Nevada ghost town. Barracks doors hang from rusty hinges; fragments of broken window panes glisten in the desert sun. The chapel, its doors boarded up, is marked "off limits."

In a few respects, the camp looks like it is still in use. Tables and chairs are neatly stacked in the PX and ventilation stacks still turn in the wind. Flowers, looking out of place in their bleak surroundings, bloom in a rock garden.

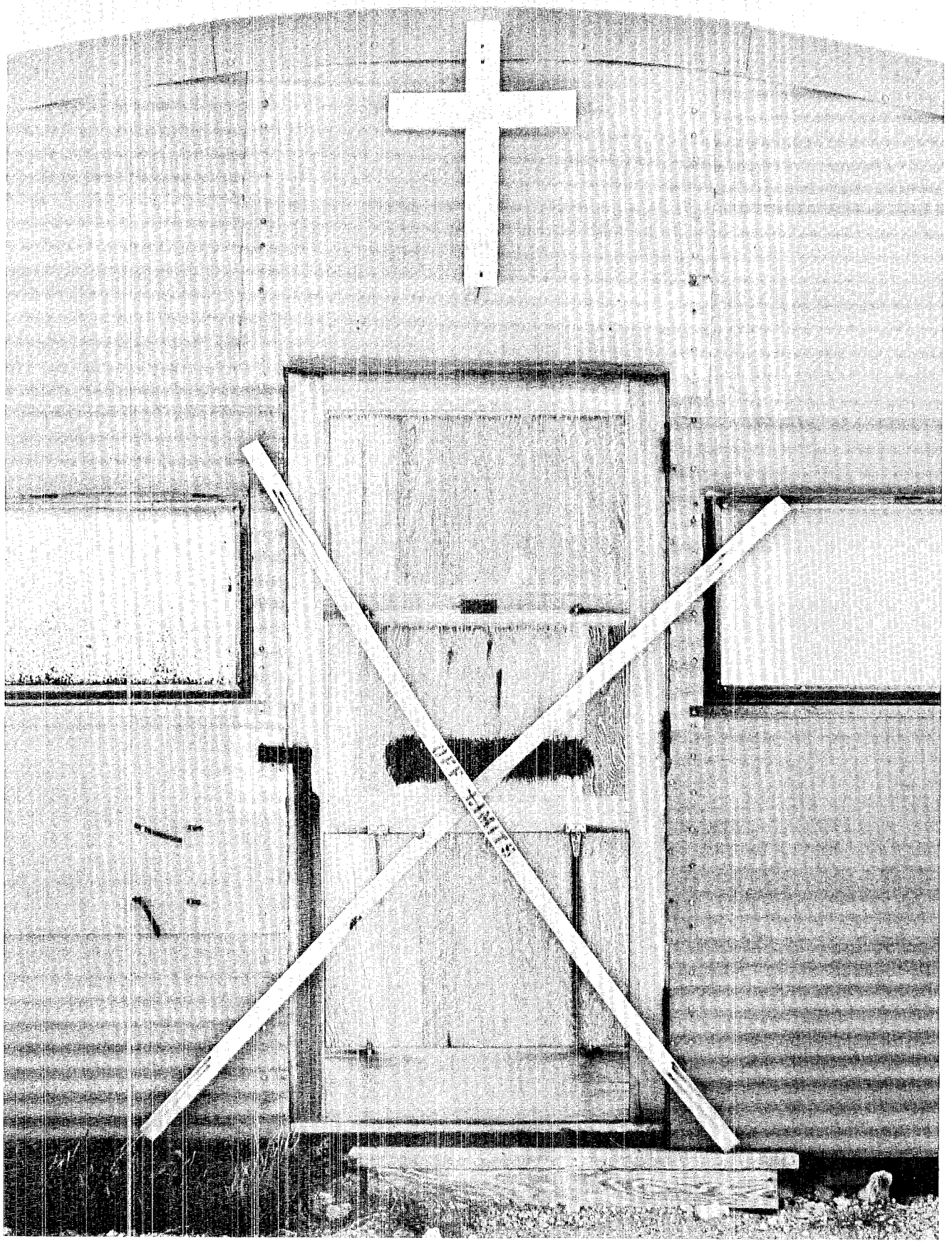
The Army chose the lonely site because of its proximity to the Nevada Test Site. Most of the troops stationed there were given weapons effects indoctrination in conjunction with atmospheric tests at NTS. The first soldiers moved into the camp on October 1, 1951, for the Buster-Jangle test series.

During the camp's seven years of activity the number of personnel fluctuated from less than 100 between tests to a high of 9,000 during the 1955 Teapot test series.

Desert Rock was largely a trailer and tent camp, built around a nucleus of more permanent structures. Oldtimers recall that there

continued on page 10

The guard shack at its entrance, like everything else at Camp Desert Rock, is abandoned. Thousands of soldiers once inhabited this Army post to take part in nuclear weapons tests at nearby Nevada Test Site.



Its door barred by a grotesque cross, even the chapel is "off limits."

Desert Rock . . .

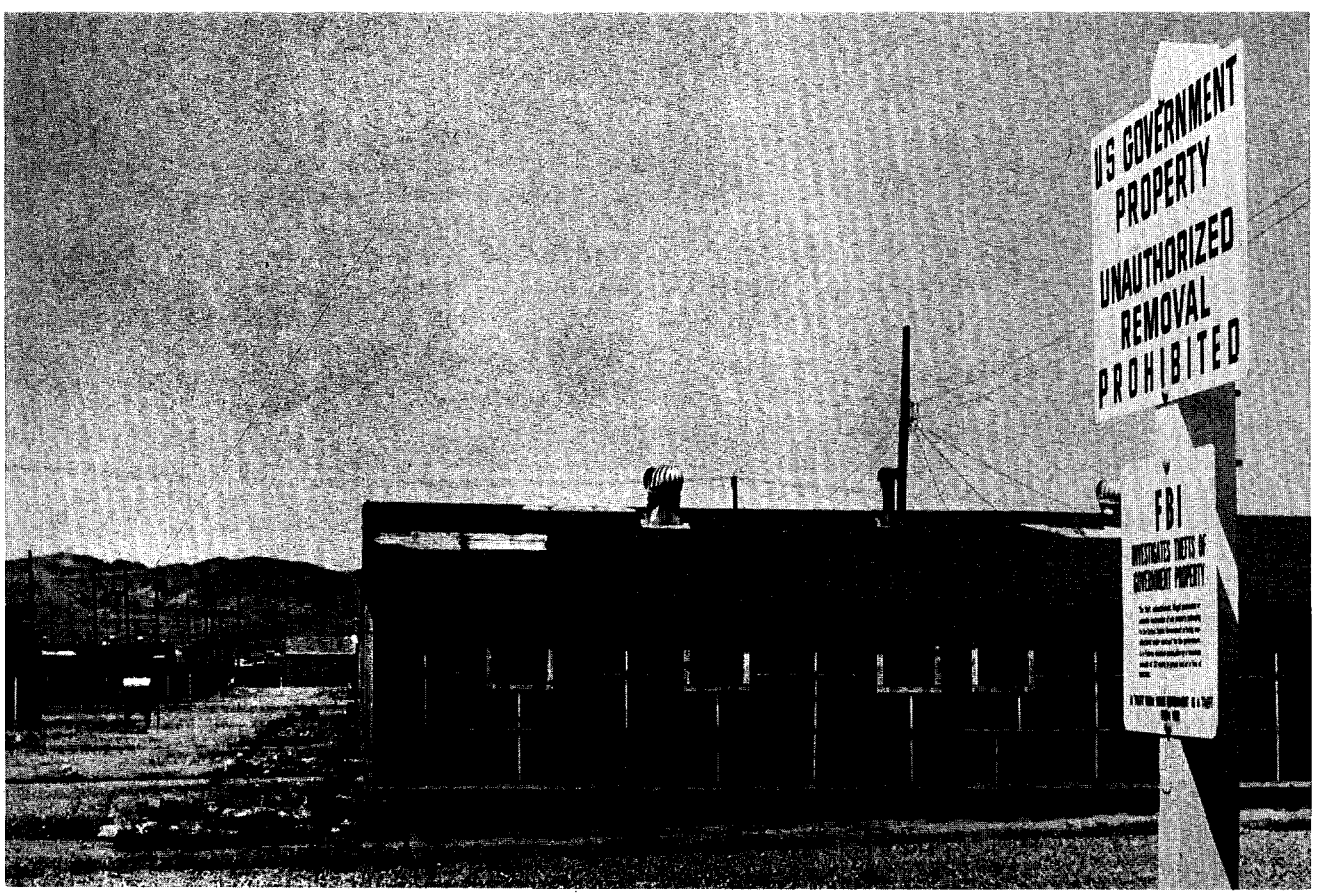
continued from page 8

always seemed to be wind and dust. During a typical Nevada zephyr, or windstorm, it was common to see much of the camp scattered around the desert.

The Army quit using the camp several years ago. Its future is still uncertain but the AEC is seeking to annex it to the Nevada Test Site.

Right: A military version of an outdoor restaurant, once the center of activity for troops during off duty hours, is a quiet place these days.

Below: Signs remind visitors that Uncle Sam still holds the deed to Camp Desert Rock.



Dr. Crew to Retire This Month

Dr. William Crew, the Laboratory's Assistant Director for Scientific Personnel since 1950, will retire December 28.

His retirement will end a career of more than 40 years as scientist, teacher and administrator.

With his wife, Dorothy, he will sail from Los Angeles, January 4, to begin a voyage to Europe by way of the Panama Canal. During the next 4½ months they will visit Italy, Spain, Greece, the Canary Islands and England. They plan to spend three full weeks in England visiting Mrs. Crew's ten brothers and sisters.

Their return, also by ship, will include stops in Venezuela, Dutch West Indies and Puerto Rico, entering the U.S. again in Florida. The couple will come back to Los Alamos and spend at least the rest of the summer here. After that their plans are still indefinite.

A native of Evanston, Illinois, Crew is a graduate of the U.S. Naval Academy, class of 1922. He received an M.A. degree in physics from Johns Hopkins University in 1924, and a Ph.D. in physics from Johns Hopkins in 1926.

After working as a physicist at the Naval Research Laboratory and teaching at the U.S. Naval Postgraduate School, he joined the New York University Department of Physics in 1929. There he remained for 12 years as assistant professor, associate professor, and finally chairman of the department.

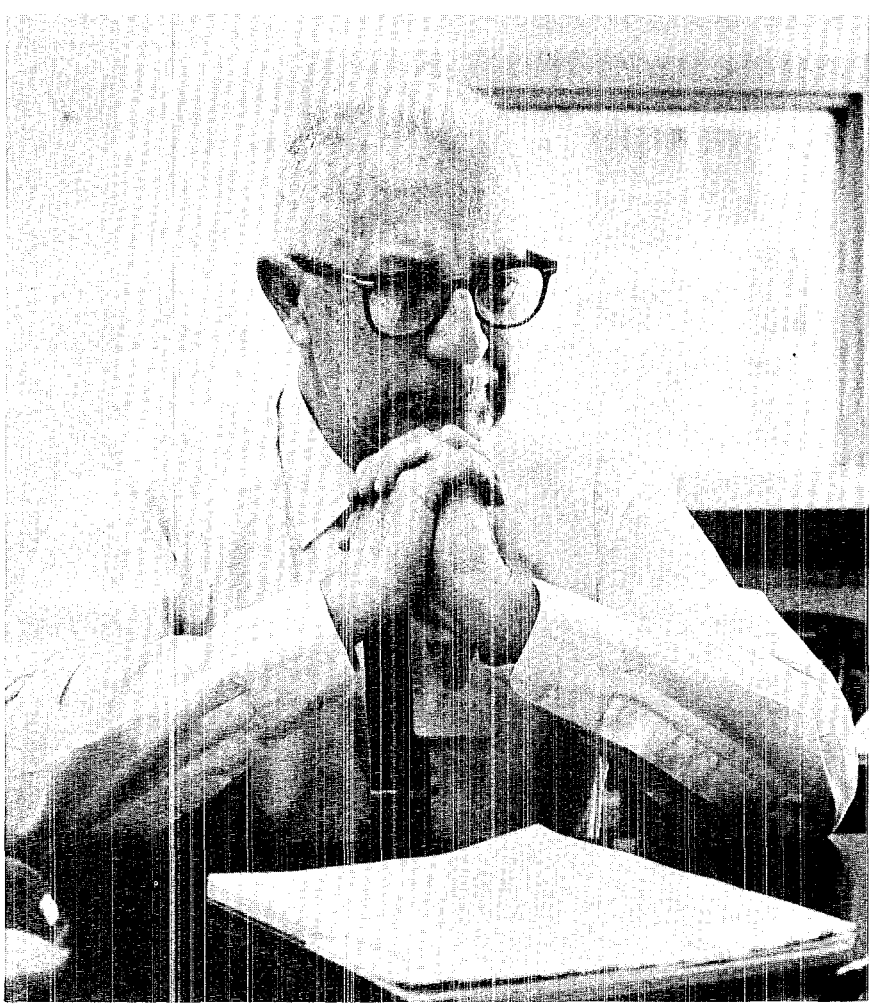
During World War II he served as Technical Aide for the Office of Scientific Research and Development, and later as Assistant Secretary of the Institute of Radio Engineers. From 1946 to 1948, he was Assistant Dean of Students at Rensselaer Polytechnic Institute at Troy, New York. For the following two years he was Dean of the College of Engineering Sciences, U.S. Air Force Institute of Technology, Dayton, Ohio.

Crew has traveled extensively in Europe. His trip next month will be his seventh to that continent since 1912.

In his capacity as a LASL assistant director, Crew has developed and supervised the administration of several of the Laboratory's formal educational programs such as the Advanced Study Program, which provides a year of graduate study at a recognized university for selected Staff Members.

He has been in charge of staff member meetings and colloquia within the Laboratory, and five years ago set up the popular Laboratory-sponsored public Evening Lecture Series which has brought to Los Alamos such speakers as Harold Urey, Edward Teller, J. Robert Oppenheimer and Aldous Huxley.

He has been extremely active in the work of the American National Red Cross since coming to Los Alamos. He has served as chairman of the local chapter, was for eight years a member of the Midwestern Advisory Council, and served the maximum two three-year terms as an elected member of the Red Cross National Board of Governors.



Dr. William Crew, LASL Assistant Director for Scientific Personnel.

Merry C

and all

At the end of its very first year in type
THE ATOM feels that the time is ripe
To wish a holiday simply scrumptious
(That is, if we're not being too presumptuous)
To things and people in numbers vast
Who left a mark on the year just past.
So here we go—(our list is ample
But space permits us only a sample.)

Let's raise our glass to the powers that be,
To Glenn Seaborg and the AEC,
To DBM and the DOD
And a special cheer for the U of C.
Strike the harp and join the chorus
Of greetings bound for Lois and Norris.
A great ovation and spot of the sauce
For Oppenheimer, our former boss.
To Senator Clint and Joe Montoya
Send a bundle of Christmas joya.
Likewise to Congressmen Walker and Morris
Back in Washington pitching for us.

Wish a season full of joy
To Dunc MacDougall and Max F. Roy.
Peace on earth to Ulam and Cooper,
Neither their bombs could be called a blooper.
Our Christmas wish for the Carco line:
Lots of luck and keep 'em fly'n'.
Good wishes, too, and reas'nable rates
To Universal and Mountain States.
Tis the season to be jolly—
Let's drink to Huber, Head and Holley,
To Taschek, Tuck and Gerald Tenney,
Pacheco, Peek and Robert Penny.
Say "Welcome back" to H. Agnew;
Drink farewell toasts to Doctor Crew.

Send a heartfelt greeting next
To those who willingly sign our checks.
To each indispensible secretary
Mail a wish to Christmas, merry.
Ladle a round of good wassail
For all the boys in Records and Mail.
For Lujan and Vigil and all the Martinezes,
Romero, Gallegos and the all the Rodriguizes,
For Roybal, Maestas, Garcia, Velarde,
Diaz and Lopez—let's throw a party.
Send a rousing midnight hail
To maintenance men on the broom detail.

Warmest wishes to all these folks:
To Ellis Stout and Doctor Loucks,
Delacroix Davis, C. C. Campbell,
Herman Roser and Betty Hammel,
Peggy Corbett and Darrell Burns,
Robert Kunce and Clifton Kearns,
To Brigadier General Delmar Crowson,
Alice Armstrong and Louis Rosen,
To Allen Moat and his Fair Lady,
Raemer Schreiber and Mrs. Beatty,
To Foster Evans and Sterling Black,
William Regan and Billy Jack.

Christmas

that stuff

Let's all remember to tip our hats
To folks at Vegas and Jackass Flats:
To Tony Miera and Harold Finger,
Ellen Aoki and Richard Singer,
Ed Hearn, Billy and David Blevins,
Both McDevitts and Arlie Givens,
Palmer, Parson, Pitcher and Limb,
Montoya, Morgan, Murray and Grimm,
Hadley, Henslee and Joseph Hait,
Schweitzer, Sager, Scoles and Tate,
Pete Yarema and Ray Zinkowski,
Ray Garcia and EG&G's Kozlowski.

Shout three enthusiastic whoops
For various and sundry groups:
For Rainbow Girls and figure skaters,
Lady Bugs and Promenaders,
Mixers, archers, Jaycettes,
Sinfonietta, air cadets,
For the League of Women Voters,
Tennis players, power boaters,
The Sheriff's Posse, river runners,
Scuba divers, big game hunters,
Shriners, Cooties, Mountaineers,
Lions, fencers, downhill skiers.

Deck the halls with greens and pinery
For computers and their numbers, binary,
For tantalum, tungsten and plutonium,
Uranium, carbon, even polonium,
For beam dynamics calculations,
Dosimetry system applications,
For mesons, photons, all strange particles,
And publishing semi-popular articles.
Ring your merry Christmas bells
For cryogenics and synchronized cells,
For lasers, masers, power reactors,
Cross sections and scattering factors,
For diagnostic interpretations
Of underground nuclear detonations.

Let all Hill folk be full of cheer
And face a new, exciting year.
Success with UHTREX and both Velas
Could give the world new cause to hail us.
A prosperous year for Project Rover
Can get us to the moon—and over.
Should you ask what's going to keep us
Plenty busy—we call it Phoebus.
Season's best to McKibben's staff
And their new tandem Van de Graaff.
May '65 bring hope of stability
To the Lab's proposed Meson Facility.

In 1965 we'll see
Twenty years since Trinity.
And speaking of days over and done—
Let's shed a tear for TA-1.
We'll all look back with memories fond
To the yacht regatta on Ashley Pond,
The endless hours of planning talks,
The rhubarb over rolling rocks.
So Happy New Year—and 'ere that's done,
Merry Christmas, everyone!

If we've missed you here this season
Blame it on rhyme—there is no reason.

What Do You Do For An Encore?

Los Alamos' Light Opera Is An Annual Tradition

BY BARBARA STORMS

When the curtain closes December 12 on "My Fair Lady," it will end the most lavish, most expensive and possibly the most ambitious undertaking in the history of Los Alamos light opera. The big problem now is: what to do for an encore. And so it has been since the first shoe-string production 17 years ago.

It all began in the summer of 1948 with stirrings of unrest within the Los Alamos Choral Society, the Hill's first organization.

"There was a group," recalls Mrs. John Manley, one of the light opera pioneers, "tired of serious music and just itching to do something lighter, something with a little grease paint in it."

LASL's John Winks, then Choral Society director, is credited with actually getting a show on the road.

"John came to me—I think it was in June," recalls Mrs. Manley, "and suggested we give it a try," Reinforcements were mustered from eager members of Little Theater and Community Orchestra and on August 26, 1948, Gilbert and Sullivan's "H.M.S. Pinafore" opened to a packed house in the old Community Theater No. 2.

"The town as a whole was rather aghast at our nerve at undertaking such a thing," Mrs. Manley said. "But toward the end, the word got around that the show was going to be good and nearly everybody came."

People were still lined up at the boxoffice opening night when there were only 17 scattered seats left in the theater. "I remember running around asking people to please move over a little and make more space," Mrs. Manley said. "Edward Teller came at the last minute with his son and begged us to find seats. They sat in the bleachers."

The show was a roaring success. "We had people whose talent was really terrific," Mrs. Manley said. "Our shows weren't as polished as they are now but we put on a truly first class amateur production and we had a lot of fun doing it. We didn't have to worry about making money."

This happy situation grew out of the community's peculiar status in 1948. The gate was still up, the town was closed, there was little to do for entertainment. "The powers that be encouraged anything that would provide entertainment for the town," Mrs. Manley explained. Funds were provided to the Community Council to underwrite any such worthwhile venture. All that was necessary was to convince the council the project was worth while. Hence, the Los Alamos Community Council is listed as producer of the first two light opera productions. "We never needed their money but it was nice to know it was there,"

continued on page 16

One of Light Opera's finest hours: "South Pacific," produced in 1960. Mary Nichols played Nellie Forbush and Don McCormick (with the coconut shells) was Billis.

A scene at the company picnic from the 1959 production of "Pajama Game."

Doris Wilhelm and Ted Dunn match words in a scene from the 1961 production of "Wonderful Town."

Light Opera . . .

continued from page 14

said Morris Milligan, H-5, first president of the Light Opera Company.

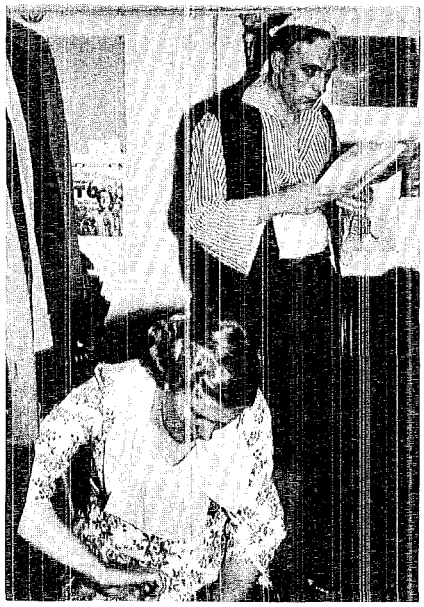
The "Pinafore" program shows the First Lord of the Admiralty played by Charles Robinson, who, with his wife, Eulas, is still active in theatrical ventures in Albuquerque. John Herzog, formerly of the Laboratory's Personnel Department, played the commander of the Pinafore and was to become a light opera regular.

Many of the people who put on the first Light Opera production still live in Los Alamos. Some of them still tread the boards for the annual show. Playing some of the leading roles in the first show were Milligan, Ed Spence, Elizabeth Graves and Peggy Hemmendinger. Also on the program were Helene and Bergan Suydam, Kathleen Mark, Opal Milligan, Katherine Benson, Kathleen Donovan, Emma Lou Young, Naomi Weaver, Bob Watt, Art Cox, Raemer Schreiber, Frank Osvath and Ernest Ritchie.

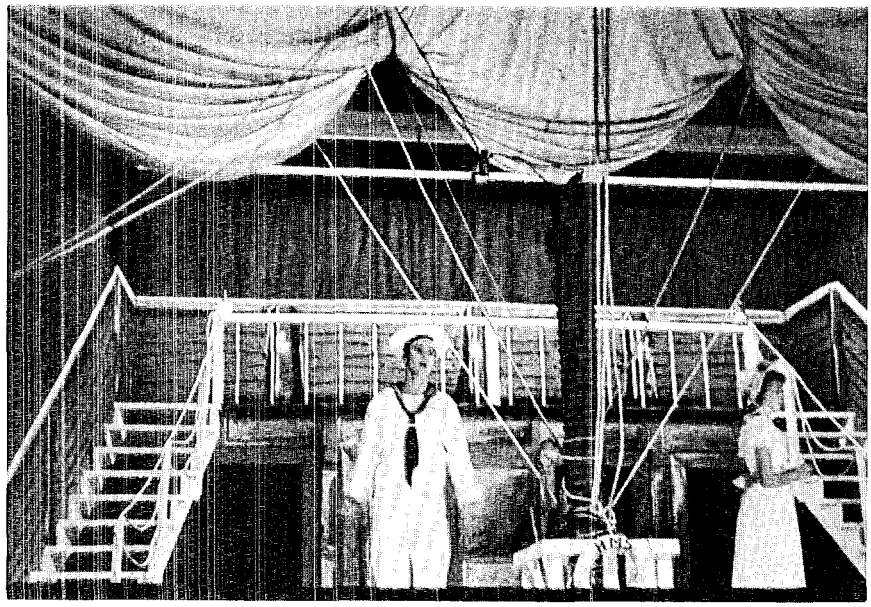
Members of the orchestra for the first production included Dick Money, Rosemary O'Connor, Walter Webber and Arno Roensch, all of whom have turned up in the pit each year and are playing for "My Fair Lady." The orchestra that and subsequent years also included Alvin Graves and the late Eric Jette.

The show was directed by John Winks with Mrs. Manley as vocal coach and John Macy, now director of the U.S. Civil Service Commission, as stage director. A. C. Anderson was sound man for the first two productions.

The following year, this time in April, the Choral Society, Little Theater and Community Orchestra again pooled their talents to produce "The Pirates of Penzance" with John Herzog as Major General Stanley, Milligan as the Pirate King and such supporting players as Opal Milligan, Art Cox, J. M. B. Kellogg, N. H. Krikorian, Don Schell, R. E. Schreiber, Bergan



Jerry Kellogg checks the program of "Pirates of Penzance" while Lore Watt repairs a costume for the 1949 show.



Initial light opera production in Los Alamos was a joint venture of the Choral Society, Little Theatre and Community Orchestra and featured Jerry Bohigan and Carolyn Kelley in "H.M.S. Pinafore."

Suydam, Robert Watt, J. J. Wechsler, Elizabeth Graves, Bernice Kelly, Faith Schell, Helene Suydam, Lore Watt and Emma Lou Young. Again directors were Macy, Manley and Winks.

By this time it was becoming increasingly clear that light opera was here to stay. More people and more money were becoming involved, sets were becoming more elaborate; somebody in the course of a production could get hurt. For these and other reasons the participants decided to incoporate within the law of New Mexico as a non-profit organization. In 1950, then, as the Los Alamos Light Opera Company, Inc., the group produced Gilbert and Sullivan's "The Gondoliers" and initiated the brand new Civic Auditorium.

"I'll never forget that show," said Mrs. Manley. "Ed Spence was playing the Duke of Plaza-Toro and just before opening night he caught a terrible cold and lost his voice. I took John Herzog out of the chorus and spent the entire day of the opening rehearsing the part with him and by 5 o'clock he knew it perfectly." Meanwhile, Mrs. Ernest Anderson, who played the Duchess, recalls, "I was frantically trying to learn all of Spence's lines in case I might have to sing both parts."

Luckily, Spence regained his voice by show time and went on. "But I swore then," Mrs. Manley said, "that we'd never again try to do a show without understudies." And sure enough, some of the subsequent Light Opera programs listed understudies for principal parts.

In 1951 the company presented "The Mikado"; in 1952 they departed from Gilbert and Sullivan to stage "Robin Hood." In 1953 Gilbert and Sullivan's "Iolanthe" was presented, and in 1954 the show was "Patience."

Gilbert and Sullivan shows were chosen, according to early participants, mainly because they were cheap. There were no royalities. Also, they were easy to sing and it was possible to rely more on the chorus than upon individual voices.

But there were those who began to tire of Gilbert and Sullivan and some who felt the audience was tired of them, too. So, in 1956, the company took the plunge into Broadway shows with "Finian's Rainbow."

"We almost didn't dare," recalls Kay Anderson, a former Light Opera president. "It cost about $1200 compared with around $600 or $700 for a Gilbert and Sullivan show. But darned if it didn't go over and we even made money. We realized then we could do anything."

After "Finian's Rainbow" came "Brigadoon" in 1956; Gilbert and Sullivan won out again in 1957 and "Yeomen of the Guard" was staged. In 1958 "Guys and Dolls" entrenched current Broadway shows firmly in Light Opera tradition, and it was followed by "Pajama Game" in 1959, "South Pacific" in 1960, "Wonderful Town" in 1961, "Annie Get Your Gun" in 1962 and "Kiss Me Kate" in 1963.

The fact that "My Fair Lady" this year is the most current and probably the most familiar of the Light Opera Company's Broadway show efforts magnifies both the difficulty of production and the expense. Treasurer Sue Wooten estimates the show will cost at least $5000—including $1700 for royalities and scores plus the most costly sets to date.

So what'll they do for an encore?

Community Transfer Progress, Plans Outlined

A new schedule for several important stages in the transfer of the community from federal to local government and the sale of the real estate was disclosed at a community-wide conference called by the AEC on November 19.

Attended by 35 representatives of of the organizations most concerned, the meeting covered the proposed county zoning ordinance, FHA appraisals, AEC financial support, county assumption of municipal functions, transfer of public school facilities, plans for a new county courthouse and administrative center, removal of the Sundt apartments, and the status of various construction projects. Several Washington officials of the HHFA, FHA, and the AEC joined in the discussion. AEC Area Manager C. C. Campbell presided, assisted by Ellis Stout, chairman of the County Commission.

As AEC Deputy Manager Herman Roser summarized the discussions, unless unforseen difficulties intervene all the necessary preliminary steps should be completed during calendar 1965, and the first actual sales of real estate could begin early in 1966. He pointed out that this schedule makes no allowance for various possible delays and that "early 1966" has to be considered the earliest possible date.

Stout said the commission plans to open official hearings on the proposed county zoning ordinance, the text of which is now being polished, at 2:30 p.m. and 7:30 p.m. on December 10 in the county courthouse. Additional meetings will be called if there is enough interest, he said. At the December 10 meeting also, the county plans to take up the matter of the future of the so-called "green areas" in the community center.

If not too many changes in the ordinance result from the hearings, the ordinance should be ready for adoption in January, to become effective in March or April, Stout indicated.

John Lynch, chief appraiser for FHA, Washington, described the many steps necessary to complete the real estate "package" necessary for appraisal, and discussed the appraisal procedure to be followed. He said that the opinions of all prospective property owners will be solicited in making the appraisals, but that his office was bound by the "current fair value" language of the disposal act. He said the entire "package" would be delivered at one time, hopefully by mid-1965, and that no information on any individual property valuations would be available before then.

Joseph Smith, from the office of the administrator of HHFA (Housing and Home Finance Agency), Washington, pointed out that the disposal act requires his office, which is charged with the job of conducting the sale, to post in public the entire list of values placed on all real estate to be offered to priority holders, well in advance of the sale. The HHFA is also required to notify the Congressional Joint Committee on Atomic Energy when it believes it is feasible to proceed with the sale, in order to give the Congress a final look at the situation before the sale goes ahead.

Roser explained that it remains the AEC's responsibility to minimize the impact of the sale on the operations of the Laboratory, and that this alone might require the AEC to hold back from the sale some pieces of property inside the platted area. He said the AEC wished to interfere as little as possible with the operation of a free economy in the community, however.

Roser also discussed the status of the AEC's financing of the county's preparation for taking over the municipal operation, which to date includes the master plan, real estate platting, hiring of a county administrator, county planner and county utilities director, the referendum on utilities and the hiring of consultants. These advance expenditures have amounted to more than half a million dollars so far, he said.

Municipal functions assumed by the county to date under contract with the AEC include all recreation facilities formerly operated by the Zia Company, the Mesa Public Library (taken over July 1, 1964), and the Golf Club (taken over September 1, 1964). Roser explained that these and other facilities were being given to the county under short-term contract rather than by transfer of title, since under the law the AEC's 10-year period of financial assistance to the county starts when title is transferred, and the type of financial support now being given under Section 81 of the community transfer act has to stop at that point.

John Schroer, AEC municipal branch chief, said that by July 1, 1965, similar contract arrangements should be completed for the county to assume management of waste

removal, maintenance of roads and streets and of some unimproved areas. By July 1, 1966, the county should be in a position to assume, under contract, operation of the police department, public health office, water, and sewage disposal.

County Adrainistrator Paul Noland said the county is getting ready for its expanded operation, setting up a job title and pay plan, a retirement system, and a personnel ordinance. He said the county hopes to have a preliminary budget ready by the end of this year for preliminary discussion with the AEC, since it will have to start actual budgeting in 1965 in anticipation of full assumption of municipal operations on July 1, 1967.

George Cowan, chairman of the county utilities committee, said he regarded the system of one-year contracts for county operation of various municipal functions as a good opportunity for a "dry run." Roser said county and AEC negotiating committees are meeting to discuss terms of the contract under which the county will take over community gas and electrical distribution systems on July 1, 1966. At the same time the terms of the donation of these facilities by the AEC to the county on July 1, 1967, also are being talked over. A few months in advance of the July 1, 1966 takeover, the county is expected to start staffing the utilities operation. Fred Sack, newly-employed county utilities manager, was introduced.

Roser made it clear that the AEC will take the blame for any changes in utilities rates that may be required by law in the interim period before the county assumes title. He said that current rates are based on firm Bureau of the Budget regulations and are comparable with other communities in the area. He said that after transfer, water, sewer and waste removal rates probably will have to be put on a break-even cost basis, which could result in a substantial increase in water rates.

County School Superintendent C. W. Richard said he expected that the transfer of school facilities to the county would be done with probably less pain than other transfers, since the schools have been operated pretty much like any public school system for the past 15 years. He foresaw some major changes in maintenance, but little other change in operations. He said the Board of Education is studying bonding procedures, future enrollments, staffing requirements, and the like.

In discussion of the county courthouse and administrative center the AEC is to build before disposal, John Schroer said a review panel is working its way through a list of prospective architect-engineers and hopes to reach a decision on the selection soon.

Loring Cox, from the AEC's real estate branch, said that since assignments to Sundt apartment units stopped last February, vacancies have grown from 60 to 150 by attrition. Three buildings with a total of 10 units have been sold and are being removed; another three are about to be offered for sale. He said that in another year, without any particular push being put on the project, only about 75 families would be left in the Sundts.

To the question of building low-cost housing to replace the Sundts, raised by several persons at the meeting, Campbell replied that additional land would be made available as soon as possible for private construction at White Rock, Barranca Mesa, Pajarito Acres and elsewhere, but that after that it was up to the private builders.

"We have no power to force anybody to build low-cost housing, or apartments, or anything else unless they see an economic opportunity in doing so," he said. He said that TA-1 (the old Technical Area on Trinity Drive) probably will be the first uptown property available for building apartments, but that this would have to go up for sale along with the rest of the "package" by the HHFA in early 1966 at the earliest.

Roser emphasized that from here on, the government is out of the business of building houses, and that economics will have to take over. He expressed the personal opinion that construction costs here probably will prevent any really low-cost housing ever being built on The Hill. Roser said the AEC has no plans and no budget for extending utilities to North Mesa, but that he believed there is "plenty of land" elsewhere in and around the platted areas to take care of housing needs in the foreseeable future.

Outlining progress in pre-transfer construction as provided for in the disposal legislation, Roser said that most of the authorized $8,719,000 had been spent or committed, as follows:

SCHOOLS—expansion of high school plant nearly completed; replacement of Central School temporarily shelved.

NORTH COMMUNITY FIRE STATION—completed.

DIAMOND DRIVE WIDENING—in progress.

COUNTY COURTHOUSE — Architect-engineer to be selected shortly.

UTILITIES SYSTEMS—Rehabilitation of entire gas, water, electrical, and sewer systems in progress.

BARRANCA MESA SUBDIVISION # 4—141 lots, the last to be developed by the government, are in the process of being prepared for sale and are expected to be ready in the spring.

In response to questions, Roser said that the AEC is not prohibited by law from making additional capital improvements in the community, when authorized to do so by Congress, but that it also has no commitment to do so. He said the AEC has recognized all along that the county's ability to raise money by bond issues will be limited, but that the county first will have to do all it can before the AEC can step in to help.

"We'll just have to work these things out as we go along," he concluded.

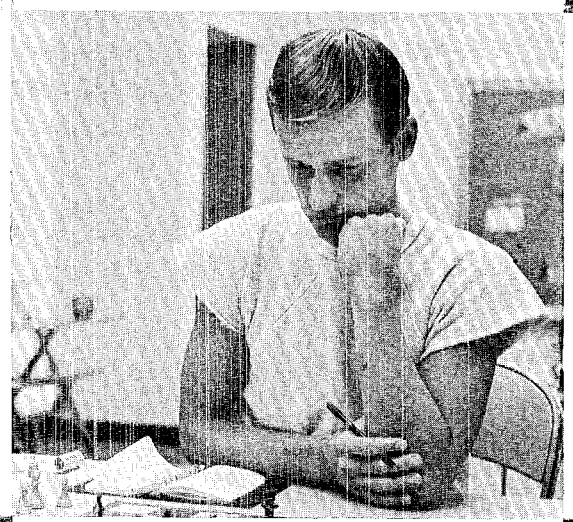
The Chess Tournament

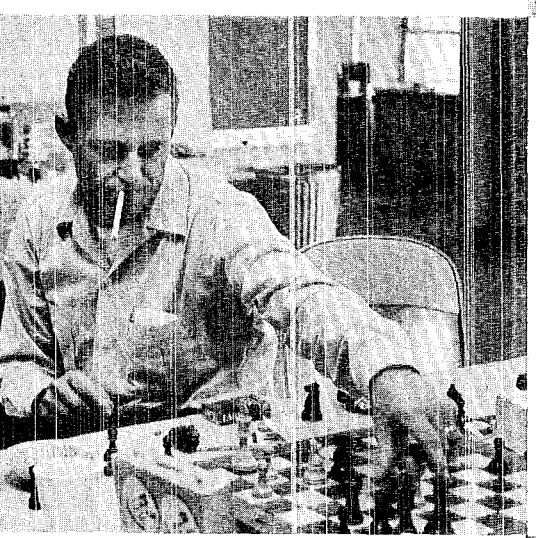
Few activities require such total absorption of the mind as does the game of chess. This was evident November 7 and 8 when 33 players took part in the annual New Mexico Open Chess Tournament at Pajarito School.

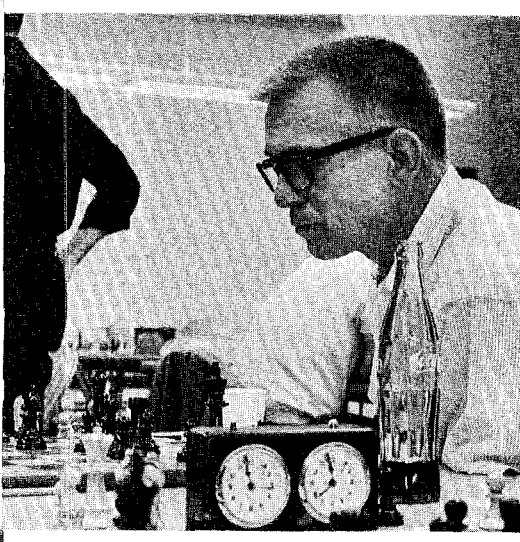
Participants in the five-round Swiss-style tourney were from El Paso and Amarillo in Texas, Boulder and Durango, Colo., and Los Alamos, Las Cruces, Grants, Santa Fe, and Albuquerque. They represented the laregst turnout since the mid-1950's, according to Mark Wells, tournament director for the sponsoring Los Alamos Chess Club. Players ranged from high school to retirement age.

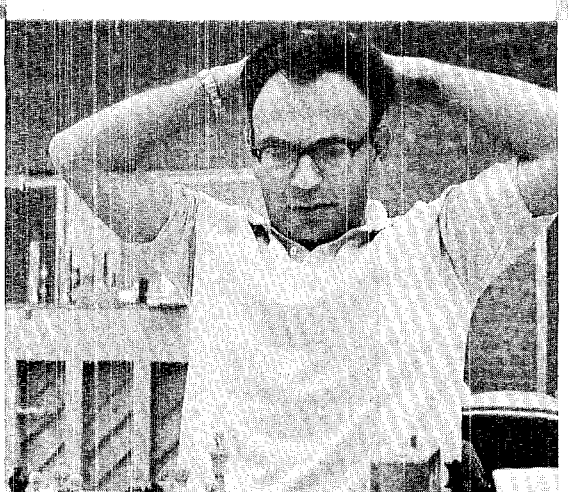
First prize went to Jack Shaw of Albuquerque. Sid Brower and Mark Wells, both of Los Alamos, won second and third, respectively. The junior trophy was won by 16-year-old Bob Fletcher of Albuquerque. The tourney was sanctioned by the United States Chess Federation and USCF Class B and C awards were made to Vern Zeigner of Los Alamos and David Brookreson of Albuquerque.

The accompanying photos illustrate the almost-motionless "action" that is typical of a chess tournament, a sporting event where silence prevails, broken only occasionally by an exultant: Checkmate!









The Technical Side

19th High Temperature Fuels Committee Meeting, North American Aviation Center, Thousand Oaks, Calif., Nov. 16-18 (classified meeting):

"Irradiation of Molten Pu-Co-Ce Fuels in Contact with Sodium" by John A. Basmajian, K-2.

"Plutonium Fuels" by J. A. Leary, CMB-11.

"UHTREX Fuel Irradiations" by P. J. Peterson, CMB-11.

"Summary of Recent and Current Studies in High Temperature Chemistry, IV, October 1964" by Melvin G. Bowman, CMB-3.

American Physical Society Meeting, Fluid Dynamics Division, Pasadena, Calif., Nov. 23-25:

"Recent Advances in Flash Radiographic Techniques to Implement Studies in Modern Fluid Dynamics" by Thomas J. Boyd, Jr., James R. Ruhe, and Douglas Venable, all GMX-11.

"Shock Initiation of Inhomogeneous Explosives" by Charles L. Mader, GMX-2.

"Interactions of Plane Detonation Waves in Condensed Explosives" by Samuel D. Gardner, GMX-7.

Zero Particle Velocity Hugoniot Pressure in Composition B" by Thomas J. Boyd, Jr. and Douglas Venable, both GMX-11.

American Nuclear Society 12th Annual Meeting, San Francisco, Calif., Nov. 30 thru Dec. 3:

"Processing of Plutonium by Ion Exchange. V. Anion Exchange Sorption from Mixed Nitric Acid-Aluminum Nitrate Solvents" by Dean B. James, CMB-11.

"A Critical Mass Survey of the U^{235}-U^{238} System" by Ralph S. Cooper,

"Simple Experimental Techniques for Deposition of Tungsten from Tungsten Hexacarbony" by Joseph C. McGuire, K-2.

"The Los Alamos 'Wing 9' Alpha-Gamma Box System" by C. C. Burwell, John W. Schulte and Mahlon T. Wilson, all CMB-14.

6th Annual Meeting of the Division of Plasma Physics, American Physical Society, New York City, Nov. 4-7:

"A Dense High Temperature Deuterium Plasma Focus" by Joseph W. Mather, P-14.

"Flute Stable Magnetic Bottles with Immersed Helical Conductors" by James L. Tuck, P-DO.

"Impurities in a Coaxial Gun Plasma" by John Marshall and Ivars Henins, both P-17.

"Characteristics of a Theta-Pinch Induced Within a Resistive Cylinder for Explosive Compression" by D. B. Thomson, C. M. Fowler, R. S. Caird, and W. B. Garn, all GMX-6.

"Low Density Experiments Without Magnetic Bias Fields in the Scylla IV Theta-Pinch" by W. E. Quinn, E. M. Little, and G. A. Sawyer, all P-15.

"Numerical Studies of Theta-Pinches" by Thomas A. Oliphant, Fred L. Ribe, P-15.

"Recent Experiments on Large Theta-Pinches," by Fred L. Ribe, P-15, (Invited paper).

"Continuous Interferometry and Particle Losses in the Scylla IV Theta-Pinch without Magnetic Bias Field" by G. A. Sawyer, F. C. Jahoda, E. M. Little, and W. E. Quinn, all P-15.

"Extension of the C. W. Laser Interferometry Technique for Measuring Plasma Density" by D. A. Baker and J. E. Hammel, both P-17; and F. C. Jahoda, P-15.

New Mexico Society for Biological and Medical Research Meeting, Albuquerque, N.M., Nov. 7:

"A Fluorescence Assay for Histones" by G. R. Shepherd and B. J. Noland, both H-4.

American Nuclear Society Meeting, Santa Fe, N.M., Nov. 6:

"Radiochemical Methods for Determination of Energy and Temperature Distribution in Kiwi Reactors" by James Sattizahn, J-11.

Talk presented at Department of Physics Seminar, University of Colorado, Boulder, Nov. 9:

"Direct and Indirect Final State Interaction" by John H. Manley, DIR OFF.

New Mexico State Medical Society Interim Meeting, Los Alamos, Nov. 19-21:

"Radiation Dosimetry and Precautions to be Taken in the Care of a Contaminated Patient" by Dean D. Meyer, H-1.

Institute of Electrical and Electronics Engineers Section Meeting, Los Alamos, Oct. 30:

"Analysis and Design of Circuits by Digital Computers" by Allan F. Malmberg, T-7.

Colloquium, Heat Division of National Bureau of Standards, Washington, D.C., Nov. 17:

"The 1962 He^3 Scale of Temperatures" by Robert H. Sherman, CMF-9.

Eighth Meeting of the Particle-Fuels Working Group, General Atomic, La Jolla, Calif., Nov. 17-18:

A classified paper at this classified meeting was presented by R. J. Bard, CMB-8.

Department of Chemistry Colloquy, Arizona State University, Tempe, Nov. 13:

"Ideal Structures and Nonideal Compositions" by Guy R. B. Elliott, CMF-2.

I.A.E.A. Symposium on Radiochemical Methods of Analysis, Salzburg, Austria, Oct. 19-23:

"Application of Advanced Gamma Scanning Techniques to Tracer Analysis" by Dale M. Holm and W. Mort Sanders, both K-1.

NEW HIRES

Marguerite H. Cislaghi, Los Alamos, H-DO (Casual).

Janice N. Miller, Norman, Oklahoma, T-1.

John Robert Bronnenkant, Santa Fe, N.M., SD-1.

Peter Burt Scott, Great Barrington, Mass., SD-1.

Joe Macario Sanchez, Dixon, N.M., SD-2.

Eligio Cladio Griego, Santa Fe, N.M., GMX-3.

William Lynn Tyson, Las Cruces, N.M., GMX-1 (Rehire).

Sarah S. Fullbright, Los Alamos, PUB (Casual).

William R. Pettit, Houston, Texas, ENG-2.

Michael Shelton Martin, Los Alamos, SD-1.

George F. Phelps, Jr., Los Alamos, H-1.

Orval L. Burnworth, Los Alamos, K-1 (Casual-Rehire).

Thomas P. DeBusk, Albuquerque, N.M., J-11.

Ramona May Pitschke, Los Alamos, T-1 (Rehire).

Barry P. Shafer, Albuquerque, N.M., W-1 (Rehire).

Junior Clyde Armstrong, Los Alamos, GMX-4.

Joseph E. Duran, Santa Fe, N.M., SD-1.

Aaron M. Martinez, Los Alamos, H-4.

Janis Fern Builta, Los Alamos, SP-1.

William Alfred Chella, Quincy, Mass., SD-1.

Ramona Alice Romero, Santa Fe, N.M., D-2.

Donald R. Myers, Livermore, Calif., P-DOR.

Patricia Ann Kelley, Los Alamos, P-DO (Rehire).

Melvin T. Thieme, Livermore, Calif., W-4 (Rehire).

Fred Joe Montoya, Espanola, N.M., T-1.

Sylvia T. Roybal, Santa Fe, N.M., SP-3.

Edwina Lou Shelton, Los Alamos, SP-3.

WHAT'S DOING

LOS ALAMOS SKATING ASSOCIATION: Schedule for use of local ice rink.

Mondays: General skating, 3 to 5 p.m., 7 to 9:30 p.m.

Tuesdays: "Ladies and Tots" session, 9:30 to 11:30 a.m.; general skating, 3 to 5 p.m.; adults only from 7 to 10 p.m.

Wednesdays: General skating, 3 to 5 p.m., 7 to 9:30 p.m.; hockey practice, 9:30 to 10:30 p.m.

Thursdays: "Ladies and Tots" session, 9:30 to 11:30 a.m.; general skating, 3 to 5 p.m.; Figure Skating Club, 6 to 7:30 p.m.; adults only from 7:30 to ,10 p.m.

Fridays: General skating, 3 to 5 p.m.; "Game Nite" (primarily for teenagers), 7 to 10 p.m.

Saturdays: Hockey during the morning; general skating, 2 to 5 p.m. 7 to 10 p.m.

Sundays: Professional lessons, 10 a.m. to 1:30 p.m.; general skating, 2 to 5 p.m.; Figure Skating Club, 6 to 7:30 p.m.; adults only, 7:30 to 10 p.m.

LIGHT OPERA: "My Fair Lady." All seats reserved. Tickets priced at $3, $2.50, $2 and $1.50. Light Opera Company's 17th production.

Friday, Saturday, December 4 and 5; Friday, Saturday, December 11 and 12. Civic Auditorium, 8:15 p.m.

SWIMMING CLASSES: sponsored by Red Cross for members of the Calorie Counters and all pre-natal and post-natal women. Free. Meets every Saturday, noon to 1 p.m., High School pool. Phone 2-4094 for further information.

FILM SOCIETY: Civic Auditorium. Films shown 7 and 9 p.m. Admission by season ticket or 90 cents single admission.

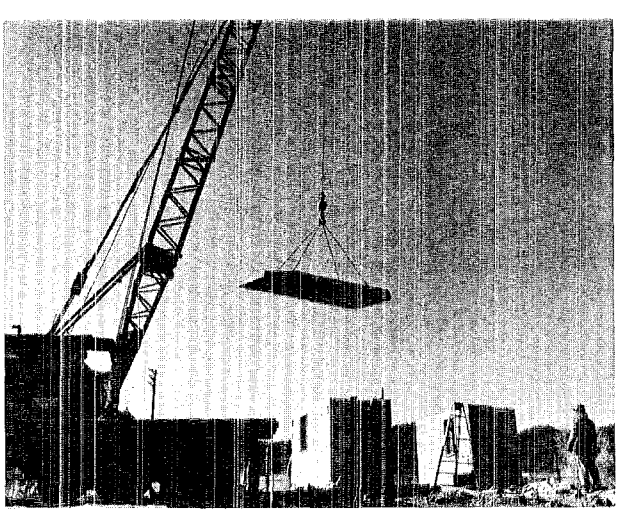
Wednesday, December 16, "My Name is Ivan." Russian serio-comedy.

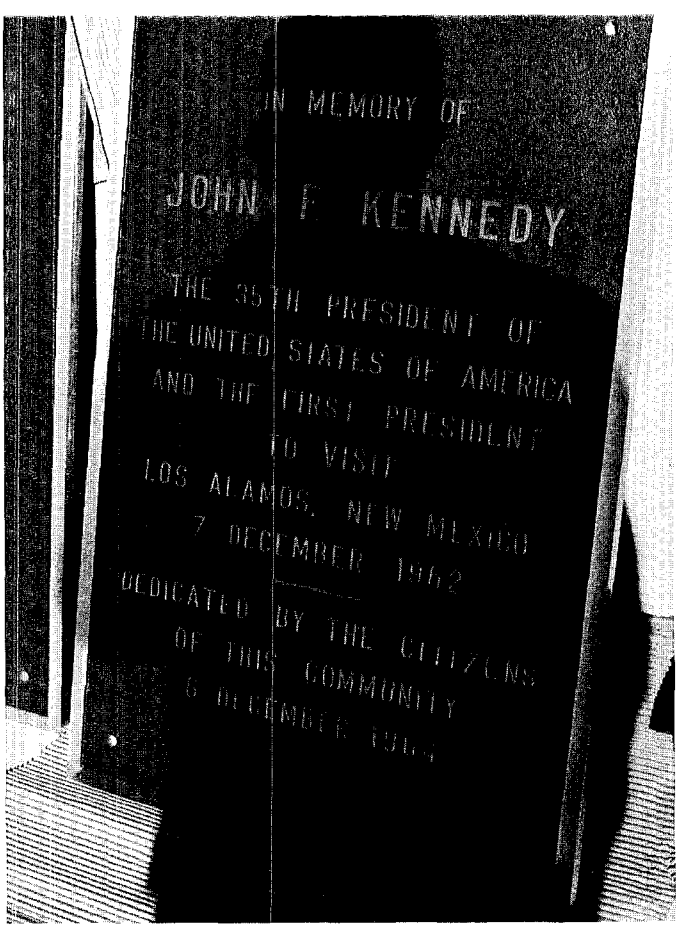
LOS ALAMOS HIGH SCHOOL POOL: Fall schedule for public swimming. Adults 35 cents, students 15 cents.

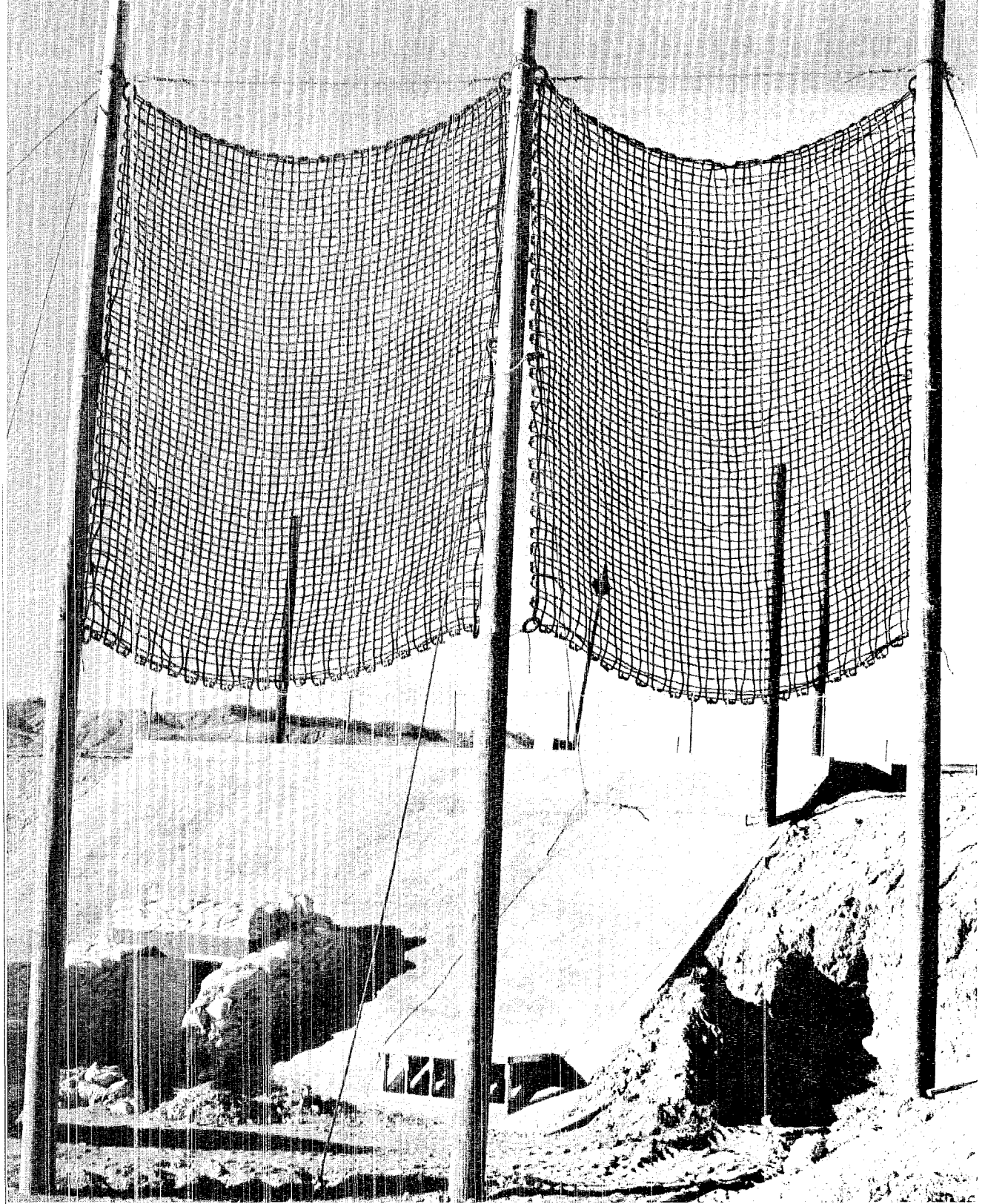
Monday	7:30 p.m. to 9:30 p.m.
Tuesday	7:30 p.m. to 9:30 p.m.
Wednesday	7:30 p.m. to 9:30 p.m.
Saturday	1:00 p.m. to 6:00 p.m.
Sunday	1:00 p.m. to 6:00 p.m.

LASL last month received its first Award of Honor for working 3,373,000 continuous man-hours without a disabling injury—from January 27, 1964, to July 8, 1964. Charles C. Campbell, AEC Area Manager at Los Alamos (left) presents the award, a bronze plaque, to LASL Director N. E. Bradbury and Safety Director Roy Reider.

A memorial to the late President John F. Kennedy, the only president ever to visit Los Alamos, was dedicated December 6. A functional memorial, it serves as the entrance to the local football field where Kennedy addressed Los Alamos citizens during his December 7, 1962 visit. The monument was paid for entirely by contributions of people in Los Alamos and the surrounding area. At right is one of two bronze plaques telling of Kennedy's visit and speech. Below, the memorial under construction.







Looking like a ballfield backstop, a steel cable net has been erected at the Nuclear Rocket Development Station in Nevada, near the site where an experimental Kiwi-type nuclear reactor is scheduled to be deliberately exploded in early January. The net is between the concrete pad on which the reactor will be blown apart, and Test Cell C, about 900 feet away. The net's purpose is to catch or deflect any large pieces of the reactor which might otherwise be hazardous to the test cell. The Project Rover safety experiment has been dubbed TNT, for Transient Nuclear Test. LASL scientists will start up the reactor very quickly, causing it to blow itself apart. The experiment will provide data on the extent of possible accidents involving a nuclear rocket reactor. Photograph by Bill Jack Rodgers.

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